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EXAMINER	
STRANGE, AARON N	
ART UNIT	**PAPER NUMBER**
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/668,253	BECHTOLSHEIM ET AL.	
	Examiner	Art Unit	
	Aaron Strange	2153	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 September 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-90* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-84,86-88 and 90* is/are rejected.

7)☒ Claim(s) *85 and 89* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 September 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see page 22, lines 11-12, filed 9/28/2004, with respect to claim 30 have been fully considered and are persuasive. The rejection of claim 30 under 35 USC 103 has been withdrawn.

2. Applicant's arguments with respect to claims 41-44 and 58-64, filed 9/28/2004, have been fully considered but they are not persuasive.

3. Applicant's arguments with respect to claims 1-40, 45-57, and 65-74 have been considered but are moot in view of the new ground(s) of rejection.

4. With regard to claims 1,2,10-13,16,24,25,28,32-35,39,40,45,53,56,57,65, and 70 and Applicant's assertion that Huang does not maintain the Ethernet frame, the Examiner respectfully disagrees. Based on page 3, line 16 to page 4, line 3 of the specification, it appears that Applicant intends for the Ethernet frame to be the fields in an Ethernet packet excluding the preamble and start of frame field. Huang maintains these fields (Page 2, Section 2.1.1), and transmits them.

5. In response to applicant's arguments regarding claim 57 (Page 21 of remarks), the recitation "to provide OAM capabilities" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded

any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

6. Accordingly, the rejections of claims 1,2,10-13,16,24,25,28,32-35,39,40,45,53,56,57,65, and 70 under 35 USC 102(e) as being anticipated by Huang, presented in the first Office action, are maintained.

7. With regard to claim 41, and applicant's assertion that Huang does not modify an Ethernet packet (Page 23, Line 10 of remarks), the Examiner respectfully disagrees. Applicant asserts that Huang inserts a header into a SONET frame which already contains management information. However, the header being inserted (core header) contains the management information in question, so the frame does not already contain management information. Figure 8 clearly shows that the preamble is being replaced with the core header as disclosed by Huang in step 4 of example 2.

With regard to Applicant's assertion that the frame disclosed by Huang cannot be converted back to a standard Ethernet packet by replacing the management information with a standard Ethernet preamble since a new Ethernet packet would have to be generated (Page 23, Lines 12-14 of remarks), the Examiner respectfully disagrees. Figure 8 clearly shows that the preamble is replaced with the management information

(core header). The packet could be converted back to the format in which it was received simply be replacing the management information (core header) with the preamble.

With regard to Applicant's assertion that a new Ethernet packet would have to be generated, it should also be noted that claim 41 does not preclude a new packet from being generated. In fact, claim 41, in lines 5-6 specifically states "replacing the header in the modified packet with a preamble within the packet to *create* an Ethernet packet " (Emphasis added). Clearly creation of an Ethernet packet requires a new packet to be generated.

8. In response to Applicant's argument with respect to claims 58 and 60-64 that there is no suggestion to combine the references, the Examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, one of ordinary skill in the art would have been motivated to add the header fields taught by Masucci to the modified Ethernet frame disclosed by Huang in order to add a dedicated communication channel for transmitting management information between terminals (Masucci Col 8, Lines 27-33).

9. With regard to claims 58,64 and their respective dependents, and applicant's assertion that "the OAM&P would still be contained within a SONET frame and transmitted from the network element as a SONET frame, rather than an Ethernet frame, as required by claim 1" (Remarks, Page 24, Lines 19-23), the Examiner would like to note that claims 58 and 64 do not depend from claim 1. Furthermore, neither transmission of frames or the format the frames would be in if they were to be transmitted are claimed in claims 58,64 or any of their dependents. Claim 58 merely states that the preamble is removed from an Ethernet packet and replaced with a header of a particular format and claim 64 states that a "digital wrapper" of a particular format is placed around a data link layer.

10. With regard to claim 59, and Applicant's assertion that Huang and Hausman do not show or suggest inserting a header in place of the Ethernet preamble that includes the same number of fewer bytes than the preamble of the Ethernet packet, the Examiner respectfully disagrees. Hausman discloses receiving a packet containing a header in place of the Ethernet preamble including the same number or fewer bytes than the preamble of the Ethernet packet (Col 3, Lines 48-61). In order for this packet to be received, it must have been generated by replacing the Ethernet preamble with the header taught by Hausman.

11. With regard to claim 59, and Applicant's argument that the proposed modification would defeat the primary functionality of the Huang system if the header were limited to

8 bytes (Page 25, Line 24 to Page 26, Line 2), the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). Additionally

Claim Rejections - 35 USC § 112

12. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

13. Claims 1-40,45-52,53-56,57,65-779,81, and 82 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

14. Claim 1 recites the limitation "the Ethernet frame" in lines 5 and 7-8. There is insufficient antecedent basis for this limitation in the claim.

15. With regard to claims 1,45,53,57, and 65, the limitation "the Ethernet frame" is unclear. It is unclear how Applicant intends for the "Ethernet frame" to differ from an "Ethernet packet". Based on page 3, line 16 to page 4, line 3 of the specification, it appears that Applicant intends for the Ethernet frame to be the fields in an Ethernet

packet excluding the preamble and start of frame field, and it has been interpreted as such for the purpose of applying prior art.

16. With regard to claim 1, the limitation "transmitting the modified packet from the network element in the Ethernet frame" is unclear. If Applicant intends to define the frame as a subset of the fields within a packet, it is unclear how the packet may transmitted "in the Ethernet frame" if it contains the Ethernet frame.

17. With regard to claim 53, the limitation "transmits the modified packet from a network element in the Ethernet frame" in lines 6-7 is unclear. If Applicant intends to define the frame as a subset of the fields within a packet, it is unclear how the packet may transmitted "in the Ethernet frame" if it contains the Ethernet frame. Claims 81 and 82 also refer to this limitation.

18. Claims 75 and 81 recite the limitation "the start of frame field" in line 2 of each claim. There is insufficient antecedent basis for this limitation in the claim.

19. Claims 76 and 82 recite the limitation "the interpacket gap" in line 2 of each claim. There is insufficient antecedent basis for this limitation in the claim.

20. With regard to claim 78, the limitation "transmitting the modified packet comprises transmitting a packet without SONET overhead" is unclear. It is unclear if the

modified packet is to be transferred without SONET overhead or if a different, additional packet is to be transferred without SONET overhead.

21. With regard to claim 79, the limitation "comprises maintaining the length of the preamble" is unclear. Claim 1, from which claim 79 depends, recites that a header is inserted in place of the preamble. It is unclear how the length of the preamble may be maintained if it has been replaced.

Claim Rejections - 35 USC § 102

22. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

23. The rejection of claims 1,2,10-13,16,24,25,28,32-35,39,40,45,53,56,57,65, and 70 under 35 U.S.C. 102(e) as being anticipated by Huang, presented in the first Office action, are maintained.

24. Claims 1,8,11,28,35,39,40,45,47,53,57,65,66,70,78,80, and 83 are rejected under 35 U.S.C. 102(e) as being anticipated by Jeffress et al. (US 6,292,517).

25. With regard to claim 1, Jeffress discloses a method for conveying network management information within a network, the method comprising: receiving an Ethernet packet at a network element (Col 4, Lines 41-43); modifying the Ethernet packet by inserting a header in place of the preamble within the packet while maintaining the Ethernet frame (Col 4, Lines 44-47), said header configured to provide support for network management (Col 7, Lines 54-61); and transmitting the modified packet from the network element in the Ethernet frame (Col 4, Lines 25-28). Jeffress fails to disclose that the header is configured to provide support for network management.

26. With regard to claim 8, Jeffress further discloses that the header includes the same number or a fewer number of bytes than the preamble of the Ethernet packet so that the size of the packet is not increased when the preamble is replaced by the header (Col 4, Lines 36-56 and Fig 5)

27. With regard to claim 11, Jeffress further discloses that said header includes application specific information (access identifier(s)) (Col 4, Lines 36-56).

28. With regard to claim 28, Jeffress further discloses that said header is inserted at an edge of the network (networking device) (Col 4, Lines 36-56).

29. With regard to claim 35, Jeffress further discloses that the network comprises a plurality of network elements (Col 3, Lines 51-53).

30. With regard to claim 39, Jeffress further discloses that the network element is in communication with at least on host computer (multiple hosts) (Col 3, Lines 51-53).

31. With regard to claim 40, Jeffress further discloses that the network element is in communication with at least one router (Central office) (Col 3, Lines 31-34).

32. With regard to claim 45, Jeffress discloses an Ethernet network system for conveying network management information, the system having a network element comprising: a port controller operable to receive an Ethernet packet (Col 4, Lines 41-43), modify the Ethernet packet by inserting a header in place of the preamble within the packet while maintaining the Ethernet frame (Col 4, Lines 44-47), said header configured to provide support for network management (Col 7, Lines 54-61); and a network element controller coupled to the port controller and operable to generate (transmit) (Col 4, Lines 25-28) and consume (receive) (Col 4, Lines 41-43) network management information.

33. With regard to claim 47, a crossconnect configures to receive the packet from the port controller and select an egress port controller to transmit the packet from the network element must be present. As discussed regarding claim 45, the packet is

transmitted from the port controller, so a device must be present that decides which port to transmit the packet from, or the packet would not be transmitted. Therefore, the device is present in the system disclosed by Jeffress despite the lack of a specific reference to it.

34. Claim 53 is rejected under similar rationale as claim 1, since it recites substantially identical subject matter. A computer readable medium for storing instructions to carry out the method is inherent in the system disclosed by Jeffress since it is performed on computers.

35. Claim 57 is rejected under similar rationale as claim 1, since it recites substantially identical subject matter. A computer readable medium for storing instructions to carry out the method and a processor for executing them are inherent in the system disclosed by Jeffress since it is performed on computers.

36. Claim 65 is rejected under similar rationale as claim 1, since it recites substantially identical subject matter.

37. With regard to claim 66, Jeffress further discloses that means for modifying the packet comprises hardware (physical layer device PHY) (Col 4, Lines 36-56).

38. With regard to claim 70, Jeffress further discloses that the network element is located at an ingress boundary of the network. Since the packet is received as a standard Ethernet and modified before being transmitted, the network element is located at the ingress boundary of the network that supports the modified packets.

39. With regard to claim 78, Jeffress further discloses that transmitting the modified packet comprises transmitting a packet without SONET overhead (No SONET overhead is present)(Col 4, Lines 25-28).

40. With regard to claim 80, Jeffress further discloses that the port controller and network element are configured for receiving and sending Ethernet frames (Col 4, Lines 36-56).

41. With regard to claim 83, Jeffress further discloses that the network element is configured for receiving and transmitting Ethernet frames (Col 4, Lines 36-56).

Claim Rejections - 35 USC § 103

42. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

43. Claims 2 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeffress et al. (US 6,292,517) in view of Applicant's admitted prior art.

44. With regard to claim 2, while the system disclosed by Jeffress shows substantial features of the claimed invention (discussed above), it fails to disclose that the network element is in communication with an optical network.

Applicant admits that optical networks (SONET/SDH) are well known in the art, and commonly used for Wide Area Networks and Metropolitan Area Networks (Page 2 of present application). It would have been advantageous for the system disclosed by Jeffress to connect to a WAN or MAN that uses an optical network, in order to receive Internet Service or communicate with other devices on the WAN/MAN.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to connect to a WAN/MAN that uses an optical network in order to receive Internet service for the stations on the LAN or communicate with other devices on the WAN/MAN.

45. With regard to claim 10, while the system disclosed by Jeffress shows substantial features of the claimed invention (discussed above), it fails to specifically disclose that the network element is located on an edge of an optical network.

Applicant admits that optical networks (SONET/SDH) are well known in the art, and commonly used for Wide Area Networks and Metropolitan Area Networks (Page 2 of present application). It would have been advantageous for the network element to

connect to an optical network in addition to the network disclosed by Jeffress, in order to transfer data between the two networks.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to place the network element on an edge of an optical network. This would have allowed the network device to transfer date between the two networks.

46. Claims 3-7,9,14,19-21,36, and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeffress et al. (US 6,292,517) in view of Masucci et al. (US 6,498,667).

47. With regard to claim 3, while the system disclosed by Jeffress shows substantial features of the claimed invention (discussed above), it fails to disclose that said network management includes operations, administration, and maintenance.

Masucci discloses an OAM&P message field (Col 10, Lines 56-59) used for network management on an optical network. It would be advantageous to add these fields to the header disclosed by Jeffress, since they provide a dedicated channel for communication between the terminals.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add a field for transmitting operations, administration, and maintenance information between the devices, since it provides a dedicated communication channel for network management.

48. With regard to claim 4, Masucci further discloses that the header comprises an OAM channel (Col 10, Lines 56-59), and transmitting the OAM information to a network management station (central terminal).

49. With regard to claim 5, Masucci further discloses that the header comprises an OAM channel (Col 10, Lines 56-59) and transmitting operations, administration, and maintenance information from the network element to other network elements (remote terminals) (Col 12, Lines 34-42).

50. With regard to claim 6, Masucci further discloses the provisioning of paths within the network (Col 10, Lines 23-25).

51. With regard to claim 7, Masucci further discloses that said network management further includes performance monitoring of paths within the network (Col 13, Lines 48-50).

52. With regard to claim 9, while the system disclosed by Jeffress shows substantial features of the claimed invention (discussed above), it fails to disclose that said header comprises 8 bytes.

Masucci discloses a OAM&P message field comprising 8 bytes (24-bytes)

(Col 8, Lines 27-33), used for network management on an optical network. It would be advantageous to add these fields to the header disclosed by Jeffress, since they provide a dedicated channel for communication between the terminals.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add a field comprising 8 bytes for transmitting operations, administration, and maintenance information between the devices, since it provides a dedicated communication channel for network management.

53. With regard to claim 14, while the system disclosed by Jeffress shows substantial features of the claimed invention (discussed above), it fails to disclose that said header includes a message channel.

Masucci discloses an OAM&P message field (Col 10, Lines 56-59) used for network management on an optical network. It would be advantageous to add these fields to the header disclosed by Jeffress, since they provide a dedicated channel for communication between the terminals.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add a field for transmitting operations, administration, and maintenance information between the devices, since it provides a dedicated communication channel for network management.

54. With regard to claims 19 and 55, while the system disclosed by Jeffress shows substantial features of the claimed invention (discussed above), it fails to disclose providing sideband communication within the network via a sideband channel.

Masucci discloses an OAM&P message field (Col 10, Lines 56-59) used for network management on an optical network. It would be advantageous to add these fields to the header disclosed by Jeffress, since they provide a dedicated sideband channel for communication between the terminals.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add a field for transmitting operations, administration, and maintenance information between the devices, since it provides a dedicated communication channel for network management.

55. With regard to claim 20, Masucci discloses that management data is transmitted over the sideband channel and the OAM&P messages have an IOT address to identify the station they are headed to. The use of IP routing on the sideband channel is not disclosed.

However, IP routing is well known in the art and could be substituted for the IOT address disclosed by Masucci. This would provide the advantage of being able to use the IP address of the destination rather than the IOT address. This information is already in the packet, and the IOT field could be removed, reducing the packet size.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use IP routing on the sideband channel since the

addressing information is already available via the packet. This could reduce the size of the packet by removing the IOT field as well as standardizing the addressing information on the network.

56. With regard to claim 21, while the invention disclosed by Jeffress in view of Masucci shows substantial features of the claimed invention (discussed above), it fails to disclose using the sideband channel to perform topology discovery.

In many cases it is useful to determine the topology of the network a device is located on, and many topology discovery methods are well known in the art. Performing topology discovery on the sideband channel would allow the topology of the network to be determined simultaneously with other data transfer without creating additional congestion in the network since the sideband channel is dedicated.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to perform topology discovery on the sideband channel. This allows the network topology to be determined without creating additional traffic on the network since the discovery can be performed on the dedicated sideband channel.

57. With regard to claim 36, while the system disclosed by Jeffress shows substantial features of the claimed invention (discussed above), it fails to disclose a network management station that has access to said plurality of network elements via said header.

Masucci discloses an OAM&P message field (Col 10, Lines 56-59) used for

network management on an optical network. It would be advantageous to add these fields to the header disclosed by Jeffress, since they provide a dedicated channel for communication between the terminals and the network management station.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add a field for OAM&P messages, since it provides a dedicated communication channel for the network management station to communicate with other terminals.

58. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jeffress et al. (US 6,292,517) in view of Masucci et al. (US 6,498,667) in further view of Alon.

59. With regard to claim 15, while the system disclosed by Jeffress in view of Masucci shows substantial features of the claimed invention (discussed above), it fails to disclose using HDLC on the message channel.

Alon discloses that HDLC is a well-known layer 2 protocol. Using a standard protocol such as HDLC make implementation easier since many tools would already be available for HDLC implementations.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use HDLC to the message channel since HDLC is a well-known protocol with existing tools to make implementation easier.

60. Claims 22-24,26,27,48,54,67-69, and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeffress et al. (US 6,292,517).

61. With regard to claims 22-24, while the system disclosed by Jeffress shows substantial features of the claimed invention (discussed above), it fails to disclose that the network has a hub, mesh, or ring topology. Jeffress does disclose that the network topology is arbitrary (Col 3, Lines 45-47).

The Examiner takes Official Notice that hub, mesh and ring topologies are old and well-known in the art. Since Jeffress discloses that the network topology is arbitrary, it would have been obvious to use the system disclosed by Jeffress on a network with any well-known topology, including hub, mesh, or ring.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the system disclosed by Jeffress on a network with any well-known topology, including hub, mesh, or ring since the topology of the network is not critical to the system disclosed by Jeffress, and those topologies are well-known in the art.

62. With regard to claims 26,27,48 and 54, while the system disclosed by Jeffress shows substantial features of the claimed invention (discussed above), it fails to disclose removing the header and replacing the preamble at an egress boundary of the network.

However, the preamble of an Ethernet packet is well-known in the art and

predefined. Since a packet cannot travel over a standard Ethernet network without having a preamble, it is essential to replace the preamble of the packet if the packet must be forwarded over an Ethernet network. This would occur at a router located at an egress boundary of the network disclosed by Jeffress since the preamble must be replaced in order to travel over a standard Ethernet network.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to allow an Ethernet packet which has been previously modified to provide support for network management to be converted back into a standard Ethernet packet by replacing the management header with a standard Ethernet preamble.

63. With regard to claims 67-69, while the system disclosed by Jeffress shows substantial features of the claimed invention (discussed above), it fails to specifically disclose that the means for modifying the packet comprises microcode, software, or photonic logic.

However, these means of modifying the packet are well known in the art and each one would be acceptable for modifying the packet. They would merely be a matter of personal preference to one of ordinary skill in the art, based on various factors such as speed and cost. The choice of one or the other is not critical to the functionality of the invention.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use any means of modifying the packet which produces

the correct result. Microcode, software, and photonic logic are all acceptable choices and the choice of one or the other would be driven by external factors such as speed or cost, and the choice would not affect the functionality of the invention.

64. With regard to claim 72, while the system disclosed by Jeffress shows substantial features of the claimed invention (discussed above), it fails to disclose that the network element is located at an engress boundary of the network.

Jeffress discloses a second network element at the ingress boundary of the network which receives an Ethernet packet, modifies it, and transmits the modified packet over the network. It would be advantageous to have a network element located at the egress boundary to accept the modified packets and transmit them over an Ethernet network connected to the element.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have a network element located at the egress boundary of the network to allow the network disclosed by Jeffress to communicate with an Ethernet network connected to the network element.

65. Claims 12,13,16-18,25,29,32-34,38,51,56, and 74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeffress et al. (US 6,292,517) in view of Huang.

66. With regard to claims 12,13 and 29, while the system disclosed by Jeffress shows substantial features of the claimed invention (discussed above), it fails to

disclose transmitting a defect indicator in the header, such as an error-detecting code word or cyclic redundancy check field.

Huang teaches using a cyclic redundancy check field (CRC-16) (Page 2, Section 2.1.1, Lines 11-12) as a means to indicate whether there are any defects in the header. This allows the receiving station to verify that the data was correctly received.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a defect indicator such as a cyclic redundancy check field to indicate whether there are any defects in the header.

67. With regard to claims 16 and 17, while the system disclosed by Jeffress shows substantial features of the claimed invention (discussed above), it fails to disclose that the header includes packet type information that identifies whether the packet is an idle packet or a data packet or whether the data packet has been modified.

Huang teaches using a filed to indicate the type of packet (page 2, Section 2.1.1, Lines 6-7). Huang also discloses the existence of idle packets and data packets (Page 4, Section 2.1.2). It would be advantageous to indicate whether the packet is an idle packet using the type field, since this would make it easier to determine if a packet is an idle packet.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a type field to indicate whether a packet is an idle packet or a data packet, since it would make it easier for a receiving station to determine what type of packet is being received.

68. With regard to claim 18, while the system disclosed by Jeffress in view of Huang shows substantial features of the claimed invention (discussed above), it fails to specifically disclose that the packet type information identifies that the Ethernet packet has been modified.

However, it would certainly be advantageous to know whether a packet has been modified. By notifying a network device that the packet has been modified, it can determine if the information in the header is correct. If the modification field is not set, then the device would know that the standard preamble is in the first 8 bytes, rather than the management header. This would prevent the preamble from being read as the management header, possible providing incorrect information to the network device. This would also allow the same network devices to transmit both standard and modified Ethernet packets over the same segment, reading the header only on the packets which have been identified as modified.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the packet type information identify that the Ethernet packet has been modified. This allows the receiving station to quickly and easily determine if a packet has been modified and prevent the preamble form being interpreted as a management header.

69. With regard to claim 25, while the system disclosed by Jeffress shows substantial features of the claimed invention (discussed above), it fails to disclose inserting an idle

packet into a packet stream at the network element during periods when no data is received by the network element.

Huang teaches inserting an idle packet into a stream when there is no data available to be transmitted. This allows the receiving stations to determine that no data is being transmitted so they will not assume that the link has failed.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to insert an idle packet into a stream when there is no data to be transmitted. This will ensure that the receiving stations will not assume that the link has failed simply because they have not received any data.

70. With regard to claims 32-34 and 56, while the system disclosed by Jeffress shows substantial features of the claimed invention (discussed above), it fails to disclose multiplexing/demultiplexing streams at the network element and receiving node or a subinterface identifier which identifies an originating port for each of the packets.

Huang teaches multiplexing packet streams at the network element (Page 3, Section 2.1.1.2, Lines 1-3). Multiplexing the packet streams allows for a higher total throughput since multiple streams can be transmitted at once. Huang further teaches the user of a subinterface identifier identifying an originating port for each of the packets (Src Port field) (Page 3, Section 2.1.1.2, Lines 5-7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to multiplex/demultiplex packet streams and include an identifier identifying an originating port for each of the packets since this would have

allowed multiple streams to be transferred at one, increasing the throughput of the network.

71. With regard to claims 38, 51, and 74, while the system disclosed by Jeffress shows substantial features of the claimed invention (discussed above), it fails to disclose that the network element is a transit node or receiving the modified packet at a transit node, modifying the header, and forwarding the packet.

Huang teaches receiving a packet and updating a field in the header prior to forwarding the packet (decrement TTL)(Page 3, Section 2.1.1.2, Lines 11-14). Decrementing a TTL field would be advantageous since it would allow the receiving station to specify when the message will expire, preventing old messages from being received by a management station.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to receive the modified packet at a transit node, modify the header by decrementing a TTL field, and forward the packet. This allows the sender to specify when a message will expire, preventing old messages from being received by a management station.

72. Claims 41-44,84,86-88, and 90 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang.

73. With regard to claim 41, Huang discloses modifying an Ethernet packet (frame from a 10Baset-T port) (Page 6, Example 2) by replacing the preamble with a header (core header) configured to provide support for network management (Page 7, Example 2, Step 4). However, Huang fails to disclose converting the packet back to a standard Ethernet packet by replacing the header with a preamble.

However, the preamble of an Ethernet packet is well-known in the art and predefined. Since a packet cannot travel over a standard Ethernet network without having a preamble, it is essential to replace the preamble of the packet if the packet must be forwarded over an Ethernet network. This would occur at a router which is connected to a standard Ethernet network as well as a network which supports the method disclosed by Huang.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to allow an Ethernet packet which has been previously modified to provide support for network management to be converted back into a standard Ethernet packet by replacing the management header with a standard Ethernet preamble.

74. With regard to claim 42, as discussed regarding claim 41, the network element is located at an egress boundary of the network (SONET) (Page 2, Lines 1-3).

75. With regard to claim 43, since the preamble replacement occurs only at the edge of the network, the packet must be received from a transit network element located within the network, or it would not have had the preamble replaced with a header.

76. With regard to claim 44, Huang further discloses that the network element is in communication with an optical network (SONET) (Page 2, Lines 1-3).

77. With regard to claim 84, Huang further discloses that the network is a WAN (SONET transport network) (Page 2, Lines 1-8).

78. With regard to claim 86, Huang further discloses that transmitting the Ethernet packet comprises transmitting the Ethernet packet without a SONET frame. As discussed regarding claim 41, the header is replaced with a standard Ethernet preamble prior to being transmitted since the preamble is required for transmission over a standard Ethernet network. The transmitted packet is a standard Ethernet packet, and no SONET frame is transmitted.

79. With regard to claim 87, Huang further discloses that transmitting the Ethernet packet comprises transmitting the Ethernet packet without SONET overhead. As discussed regarding claim 41, the header is replaced with standard Ethernet preamble prior to being transmitted since the preamble is required for transmission over a

standard Ethernet network. The transmitted packet is a standard Ethernet packet, free of SONET overhead.

80. With regard to claim 88, while Huang does not specifically recite that replacing the header comprises maintaining a minimum interpacket gap, this would be required when converting the frames back to standard Ethernet frames. A minimum interpacket gap since it is required in order to transmit packets via Ethernet, so it would have to be maintained in order to transmit the frames over an Ethernet network.

81. With regard to claim 90, Huang further discloses that replacing the header in the modified packet comprises preserving the Ethernet frame structure. As discussed regarding claim 41, the header is replaced with standard Ethernet preamble prior to being transmitted since the preamble is required for transmission over a standard Ethernet network. The resultant packet would be a standard Ethernet packet, which would preserve the Ethernet frame structure.

82. Claims 58 and 60-64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang in view of Masucci et al. (US 6,498,667).

83. With regard to claims 58 and 64, Huang discloses a system for supporting network management, the system comprising a handler operable to remove a preamble from an Ethernet packet and insert a header (Page 7, Example 2, Step 4). Huang fails

to disclose that the header contains an OAM field, message field, or application specific field. Huang does disclose the existence of a header error detection field (CRC) (Page 2, Section 2.1.1).

Masucci et al. disclose an OAM&P message consisting of an operations, administration, and maintenance field (400), a message channel (402), and an application specific field (opcode) (406) (Col 12, Lines 25-34). These fields allow different operations to be performed base upon the values in each field. It would be advantageous to add these fields to the header disclosed by Huang, since they allow a greater amount of control with regard to network management.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the header fields disclosed by Masucci et al. to the header disclosed by Huang since they provide a greater degree of control over the network management process, and allow more information to be transferred between the network devices.

84. With regard to claim 60, while the system disclosed by Huang shows substantial features of the claimed invention (discussed above), it fails to disclose transmitting a defect indicator within said header that instructs a receiving node to switch to a backup path.

Huang does disclose a congestion notification field used to indicate congestion experienced along the link, to allow the receiving node to take action to avoid the congestion. It would be an advantageous and natural extension to indicate other defects

detected on a link and have the receiving station switch to a backup path to alleviate congestion or ensure connectivity in the event of a failed link.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to transmit a defect indicator within said header and switch a receiving node to a backup path in the event that a major defect such as severe congestion or a failed link is detected.

85. With regard to claim 61, Huang further discloses a subinterface identifier which identifier for use in demultiplexing packet streams (Src Port field) (Page 3, Section 2.1.1.2, Lines 5-7). Huang does not specifically disclose the step of demultiplexing, but the packet streams must be demultiplexed at the receiving node in order to be read. Therefore, this feature is present in the system disclosed by Huang despite the lack of a specific reference.

86. With regard to claim 62, Huang further discloses that the header error detection field is a header cyclic redundancy check (CRC-16) (Page 2, Section 2.1.1, Lines 11-12).

87. With regard to claim 63, while the system disclosed by Huang in view of Masucci et al. shows substantial features of the claimed invention (discussed above), it fails to disclose that the header includes fields for SRP.

However, SRP is a well-known protocol for use with ring based media, as

disclosed by Applicant on page 33, Lines 16-19 of the present application. Adding these fields to the header would be advantageous because it would allow the SRP protocol to be run on the network.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add header fields for SRP in order to allow the SRP protocol to be implemented on the system disclosed by Huang in view of Masucci et al. This would provide the benefits of the SRP protocol to this network.

88. Claim 59 is rejected under 35 U.S.C. 103(a) as being unpatentable over Huang in view of Masucci et al. (US 6,498,667) in further view of Hausman et al. (US 5,872,920).

89. With regard to claim 59, while the system disclosed by Huang in view of Masucci et al. shows substantial features of the claimed invention (discussed above), it fails to disclose that the header includes the same number or fewer bytes than the preamble of the Ethernet packet so that the size of the packet is not increased when the preamble is replaced by the header.

Hausman teaches the use of the preamble portion of an Ethernet packet for the transmission of other data (Col 3, Lines 48-61 and Fig 3). Prior to transmitting the packet over an Ethernet network, the standard Ethernet preamble is replaced. By limiting the size of the header to be the same as the preamble, the packet size remains constant and will fit in the same buffer as an Ethernet packet.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to limit the size of the header to be less than or equal to the size of an Ethernet preamble. This will ensure that the new packets can fit in the same buffer as an Ethernet packet and make modifying them easier. It would be particularly advantageous to set the length of the header to be exactly 8 bytes since that is the length of a standard Ethernet preamble. That way the preamble could be easily removed or replaced by simply overwriting the first 8 bytes of the packet.

90. Claims 52,71,73, and 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeffress et al. (US 6,292,517) in view of Masucci et al. (US 6,498,667) in further view of Huang.

91. With regard to claims 52, 71, 73, and 77, while the system disclosed by Jeffress shows substantial features of the claimed invention (discussed above), it fails to disclose that the header is a CDL header which comprises an operations, administration, and maintenance field; a message channel; an application specific field, and a header error detection field.

Masucci teaches the use of an operations, administration, and maintenance field (400), a message channel (402), and an application specific field (opcode) (406) in a header. These fields allow management information to be transmitted between terminals on the network. Huang teaches the use of a header error detection field

(CRC) (page 2, Section 2.1.1) as a means to determine if the data in the header was properly received.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a CDL header comprising CDL an operations, administration, and maintenance field; a message channel; an application specific field, and a header error detection field, since these fields allow the transfer of network management information and allow verification that the data is correctly received.

Allowable Subject Matter

92. Claims 30,31,37,46,49, and 50 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

93. Claims 85 and 89 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

94. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

95. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

96. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron Strange whose telephone number is 571-272-3959. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glen Burgess can be reached on 571-272-3949. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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ANS 2/9/2005

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